



Mental contrasting in DanceSport: The champion's mindset

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ABSTRACT

The self-regulation strategy of mental contrasting of a desired future with the obstacles of current reality has been shown to spur effort and successful performance. We investigated the spontaneous use of mental contrasting in the context of professional DanceSport. Higher- and lower-performing DanceSport athlete couples elaborated on their wishes regarding training and an upcoming competition. We content analyzed couples' spontaneous mental strategy while elaborating their wishes and related the mental strategy to couples' recorded ranking and to their performance at the upcoming competition. Higher-performing couples, relative to lower-performing couples, engaged in more spontaneous mental contrasting when elaborating on training- and competition wishes. Among higher-performing couples, spontaneous mental contrasting predicted successful performance at the competition. The results suggest that mental contrasting appears to be an effective self-regulation strategy that can spur DanceSport athletes' performance. These benefits could possibly extend to the wider field of competitive athletics.

Imagine watching one of the biggest international DanceSport championships in the world. After days of grueling elimination rounds with hundreds of dance couples, only six couples can make the final, and only one couple can emerge as Champion. Given that the world's top DanceSport athletes all go through strenuous physical training, what sets champions apart from the rest of the competition? Do champions utilize a mental strategy that propels them to actively pursue and attain their goals?

Recognized by the International Olympic Committee (IOC) since the 1990s, DanceSport is a form of competitive Latin American and Standard dance, commonly known as ballroom dancing. In an increasingly competitive world of dance, success in an athlete's career is contingent not only upon physical training and dance technique, but also upon psychological factors such as mindsets and mental strategies. While past research in mental strategies among athletes focus largely on more conventional sports such as tennis, running, shooting, or soccer (e.g., Burhans, Richman, & Bergey, 1988; Crust & Azadi, 2010; Gayton, Cielinski, Francis-Keniston, & Hearn, 1989; Kruk, Blecharz, Boberska, Zarychta, & Luszczynska, 2017), we chose DanceSport in particular because of its unique characteristics; it is a sport that combines the performing arts with athletics, and hinges on the cooperation between two dance partners. Typically, DanceSport athletes are not given the competition music beforehand (though the musical rhythm is established), and therefore their success on a competition partly relies on their flexibly adapting their routines so that they merge seamlessly with

the music.

Moreover, beyond musical and improvisational circumstances, there are aspects of the competition that an athlete cannot control. The competition venue's atmosphere, health of an athlete and the mood or behavior of the dance partner, support or lack thereof from the audience, feedback from coaches – may all serve to influence an athlete's affective state. At the same time, the regulation of emotions, or the process to “influence which emotions one has, when one has them, and how one experiences or expresses these emotions” (Gross, 1998; Gross, 2015) is often deemed an important psychological skill by sports psychologists (e.g. Smith and Christensen, 1995; Thomas, Murphy, & Hardy, 1999; Thomas & Over, 1994; Uphill, McCathy & Jones, 2009). Thus, DanceSport should be particularly suited to investigate the effects of self-regulation because in this sport, the future events, such as the music to be played, reactions of the dance partner, or other external circumstances that may require self-regulatory strategies are relatively unforeseen.

In the present research, we chose DanceSport as a sports domain to examine the mental strategies that athletes use in support of their athletic performance. Specifically, we investigated the spontaneous use of the self-regulation strategy of mental contrasting. Mental contrasting should have beneficial effects for DanceSport performance since it is a strategy that helps people to imagine the future, to identify hindrances in the present, and to prepare to overcome them. Further, it is suited to regulate emotions (Houssais, Oettingen, & Mayer, 2013; Schweiger

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Gallo, Bieleke, Alonso, Gollwitzer, & Oettingen, 2018; review by Oettingen, 2012).

In the context of DanceSport, mental strategies as a pre-performance routine should help to manage emotional states by evoking emotions both physiologically and mentally, and by preparing to control those emotions. Second, they give rise to problem-solving activities, by creating specific and flexible mental representations of potential future outcomes (Latinjak, 2018a; Oettingen & Mayer, 2002; Orlick & Partington, 1986; Taylor, Pham, Rivkin, & Armor, 1998). Third, they might simulate details of movements, both visually and kinesthetically (Grosprêtre, Ruffino, & Lebon, 2015). Research has thereby identified various modes of thought and mental strategies as used by professional athletes, such as mind wandering (Latinjak, 2018b), motor imagery (Grosprêtre et al., 2015), and goal-directed and spontaneous thoughts (Latinjak, 2018a). In the present research, we focus on one specific mental strategy that has been shown to spur goal pursuit across various domains but that has not yet been investigated in the context of professional athletics: mentally contrasting a desired future with the obstacles of present reality.

1. Mental contrasting

When people engage in mental contrasting, they first imagine the attainment of a desired future. Thereafter, they mentally elaborate on the critical obstacle of their current reality that stands in the way of attaining their desired future. When the obstacle of current reality can be overcome (i.e., expectations of attaining the desired future are high), people commit to the desired future and vigorously strive to attain it. When the obstacle of current reality is impossible to overcome (i.e., expectations of attaining the desired future are low), people can adjust their wish to be less aspiring or they can let go of wanting to attain the desired future; letting go provides the freedom to commit to and expend energy for other, more promising endeavors (Oettingen, Pak, & Schnetter, 2001; review by Oettingen, 2012, 2014).

Next to the strategy of mental contrasting, Fantasy Realization Theory (Oettingen, 2012, 2014) specifies three additional ways people may think about a desired future. People might engage in indulging—they imagine *only* the successful attainment of the desired future. Such positive fantasies about the desired future are defined as “daydreams or mental images depicting future events and scenarios” (Oettingen, 1996, p. 236). Although positive thinking has been widely encouraged in the self-help and coaching literature, research suggests that positive fantasies in the form of free thoughts and images are detrimental to effort and success (Oettingen & Mayer, 2002; Oettingen & Wadden, 1991). Specifically, positive future fantasies lead people to mentally attain their goals in the here and now and thereby dampen the energy needed to actively pursue them (Kappes & Oettingen, 2011; Oettingen, Mayer, & Portnow, 2016; review by Oettingen & Cachia, 2016).

Alternatively, people may engage in dwelling—*only* imagining the obstacle of current reality, or they may engage in reverse contrasting—elaborating on the obstacles of current reality and *then* imagining the successful attainment of the desired future. In one-sided elaborations (i.e., indulging and dwelling), no discrepancy between the desired future and reality is created and the pursuit of the desired future remains unchanged. In reverse contrasting, the current reality is elaborated *before* the desired future and is therefore not perceived as an obstacle in the context of the desired future. The relational construct of current reality presenting itself as an obstacle standing in the way of attaining the desired future is not created and the strength of the pursuit of the desired future similarly remains unchanged (review by Oettingen, 2012).

Mental contrasting - as opposed to indulging, dwelling, or reverse contrasting - has been shown to spur behavior change and active goal pursuit across various domains (academic, interpersonal, health) as indicated by cognitive (e.g., making plans), affective (e.g., feelings of

anticipated disappointment in case of failure), motivational (e.g., feelings of determination), physiological (energization assessed by cardiovascular measures), and behavioral indicators (e.g., exertion of effort, quality of performance; review by Oettingen, 2012, 2014). In other words, mental contrasting is a self-regulation strategy that people can use to transform their free fantasies into binding goals with subsequent goal striving and goal attainment.

For example, mental contrasting has been shown to improve health behavior in dieting students (Johannessen, Oettingen, & Mayer, 2012), promote physical activity among overweight, low-SES men (Sheeran, Harris, Vaughan, Oettingen, & Gollwitzer, 2013), assist healthcare professionals in managing their time and decision making (Oettingen, Mayer, & Brinkmann, 2010), increase academic performance in school children (A. Gollwitzer, Oettingen, Kirby, Duckworth, & Mayer, 2011), reduce cigarette consumption (Oettingen et al., 2010) and help a clinical sample of Type 2 diabetes patients improve their self-management (Adriaanse, De Ridder, & Voorneman, 2013).

1.1. Spontaneous mental contrasting

Several studies have instructed participants to use mental contrasting and then assessed effort and performance towards a goal. Specifically, participants were asked about an important wish (e.g., excelling in mathematics) and were thereafter induced to imagine the best outcome associated with fulfilling their wish (e.g., feeling proud), before elaborating on the obstacle of current reality standing in the way of fulfilling their wish (e.g., being distracted, e.g., Oettingen et al., 2001; see Oettingen, 2012 for a review). Other work has utilized content analytic measures to assess participants' spontaneous use of mental contrasting when elaborating their wishes (Sevincer, Mehl, & Oettingen, 2016; Sevincer & Oettingen, 2013; Sevincer, Schlier, & Oettingen, 2015). Specifically, participants were asked to think about an important wish (e.g., starting a romantic relationship) and to freely write down their thoughts. Their elaborations were then content-analyzed with regard to whether they spontaneously mentally contrast (i.e., write about the desired future followed by the present reality), engage in indulging (i.e., write only about the desired future), in dwelling (i.e., write only about the present reality), or engage in reverse contrasting (i.e., write about the present reality followed by the desired future).

Similar to induced mental contrasting, spontaneous mental contrasting has been shown to predict effort and successful performance (Sevincer & Oettingen, 2013). Furthermore, Sevincer et al. (2016) found in correlational data that, among students, the spontaneous use of mental contrasting of wishes related to academic achievement was associated with outcomes such as active engagement in everyday life, high self-regulation skills, high promotion focus, high need for achievement, high self-reported grades, high need for cognition, and high extraversion. While many studies have experimentally induced mental contrasting compared to relevant control conditions (review by Oettingen, 2012) and then assessed performance, the present study adds a new perspective to the literature as it examines the predictive relation between spontaneously generated mental contrasting and upcoming real-life performance in the field, that is, in professional and competitive athletic settings.

1.2. The present research

Although mental strategies are commonly utilized by professional athletes (Taylor et al., 1998), some mental strategies interfere with problem-solving activities and subsequent effort towards attaining a goal (Oettingen, 1996; 2000), such as idealized outcome simulations (Taylor et al., 1998) and positive fantasies (Oettingen, 1996, 2012; Oettingen & Mayer, 2002). Since mental contrasting has been found to spur effort and performance towards a goal (Oettingen & Mayer, 2002; Oettingen, Pak, & Schnetter, 2001), we investigated its spontaneous use

in high-performing DanceSport athletes. In the present study, we recruited dance athlete couples, classified them as either higher or lower-performing athlete couples (relative to our sample) based on their performance history in past competitions (see also De Pauw, Roelands, Cheung, & de Geus, 2013), and assessed their thoughts and images regarding two types of wishes: a wish related to their training regimen and a wish related to an upcoming competition. We subsequently assessed athlete couples' performance at their upcoming DanceSport competition.

As a first step, we wanted to confirm that our ranking measure accurately reflects athletes' performance history. Specifically, we tested whether our measure of DanceSport ranking would predict performance at the upcoming competition, assuming that higher-performing DanceSport athlete couples, compared to lower-performing DanceSport athlete couples would perform better at the competition.

1.3. Hypothesis 1

We hypothesized that our DanceSport ranking would predict the spontaneous use of the mental strategy related to training and competition wishes. In particular, we hypothesized that higher-performing DanceSport athlete couples, as compared to lower-performing DanceSport couples, would show higher levels of spontaneous mental contrasting. We based this hypothesis on the findings by Sevincer et al. (2016), showing that more active engagement, higher self-regulation skills, and higher need for achievement are associated with a higher likelihood that participants spontaneously used mental contrasting.

1.4. Hypothesis 2

In addition, we hypothesized that spontaneous mental contrasting, compared to the other modes of thought (i.e., indulging, dwelling, or reverse contrasting) would predict a higher performance at the upcoming DanceSport competition. We based this hypothesis on the findings that mental contrasting has been shown to predict and cause effort and successful performance in the professional and academic domains (e.g., Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011; Sevincer & Oettingen, 2013, summary by Oettingen, 2012).

2. Method

2.1. Participants

Two-hundred and forty-two DanceSport athletes participated in our study by completing a questionnaire. Initially, 36 athletes were excluded from the study because they failed to record their wishes ($n = 28$), failed to identify a desired competition result ($n = 5$), or did not participate in a competition during the time of completing the study ($n = 3$). Since ranking and performance at the competitions were recorded on a couple-level, we excluded another 52 participants because they had missing data for one partner within the couple and an additional 20 participants because they had different performance scores within their couple (e.g. they identified different competitions; $n = 16$), or different ranking scores within their couple (e.g. they changed partners; $n = 4$). Our final sample was comprised of 67 DanceSport couples (i.e., 134 athletes) representing 17 countries (see Table 1). The average age of our sample was 22.26 years ($SD = 5.52$). Participation was voluntary and all who participated were entered in a raffle to win either an Apple iPhone 7 or a pair of dance shoes.

2.2. Procedure

Because we were interested in studying a small and hard-to-recruit population, we distributed our questionnaire to DanceSport athletes at various, randomly selected dance competitions (in China, Italy, and New York), as well as a dance workshop (in New York) and via email.

Table 1
Athlete breakdown by country.

Country	Frequency
USA	26
Italy	42
China	28
Singapore	2
Russia	6
Canada	6
Germany	2
Bulgaria	4
Lithuania	2
Denmark	2
France	2
Czech Republic	2
Japan	2
Moldova	2
The Netherlands	2
Taiwan	2
Sweden	2
<i>Total no. of athletes:</i>	134

At all dance competitions and workshops, a survey booth was set up next to the competition/dance studio registration counter where athletes could participate voluntarily. The athletes were asked to read and sign an informed consent form prior to answering the survey, and also asked to read and sign a debriefing form after completing the survey. Our survey and forms were made available in multiple languages (English, Mandarin Chinese, Russian, Italian, and German),¹ based on popularity of DanceSport by country, and athletes were free to respond in the language of their choice. All athletes answered the survey before an upcoming competition and performance ratings were obtained after the completion of the competition.

After completing demographic measures, athletes were asked to indicate which competition they were going to compete in, their partner's name (to match the dance partners), and their desired performance score at their upcoming competition. They then indicated their expectation and incentive value of their desired performance score. Next, participants answered questions about the two types of wishes – a training wish and a competition wish. Specifically, modes of thought generated by the athletes regarding wishes about their upcoming competition were assessed by asking participants to first identify and then mentally elaborate on one training and one competition wish. After completing the open responses athletes indicated the positivity and negativity of their thoughts and images. We did not specify the training wish to refer to training for any particular competition, although training wishes were probed prior to the *upcoming* competition, so it is reasonable to conclude that participants' training wishes relate to training for the upcoming competition. Competition wishes related to the upcoming dance competition which participants were asked to answer questions about.

2.3. Materials

The materials used in our study closely followed previous research on mental contrasting (e.g., Sevincer et al., 2016). Athletes were asked to answer demographic questions, including native and fluent languages, country of origin, and number of years of experience in DanceSport. Each participant was also asked to indicate both their and their partner's full name. After organizing and assigning all participant responses into the appropriate pairings, each response was de-identified.

¹ Surveys and debriefing forms were translated into the various languages by native speakers. Responses were coded by the authors fluent in the respective language.

2.3.1. Ranking of athletes

In order to categorize our sample into higher- and lower-performing DanceSport couples, we assigned athletes into respective groups based on each couple's rating from a commonly-used online reference database (DanceSportinfo, 2017), which ranks athletes against each other based on their performance history in past competitions. Thus, the ranking refers to past athlete performance. We used the mean rating of the sample to dichotomize group assignment, with athlete couples scoring above the mean being categorized as relatively higher-performing and athlete couples scoring below the mean being categorized as relatively lower-performing. Our final sample consisted of 35 higher-performing DanceSport couples and 32 lower-performing DanceSport couples.

2.3.2. Expectations

Mental contrasting has been shown to facilitate effort and performance in line with expectations of success (review by Oettingen, 2012). Consistent with prior research, we assessed participants' expectations of performing well at their upcoming competition. Specifically, we assessed participants' desired performance score and asked them to rate the likelihood of achieving this desired performance score on a Likert scale ("How likely do you think it is that you will achieve your desired result?") ranging from 1 (*not likely*) to 5 (*very likely*). Among couples, the inter-rater agreement for expectations was high, $r = 0.57$, $p < .001$, 95% CI [0.38, 0.73]. We computed mean expectation scores for each couple, with high scores indicating high levels of expectations to achieve the desired couple performance.

2.3.3. Incentive value

For mental contrasting to be effective, participants also have to name a desired future that is important to them (Oettingen, 2012). In line with previous mental contrasting research, we measured participants' incentive value of performing well at their upcoming competition. Specifically, we asked participants to rate the importance of achieving their desired performance score at their upcoming competition on a Likert scale ("How important is it to you to achieve the above result?") ranging from 1 (*not so important*) to 5 (*very important*). Among couples, the inter-couple agreement for incentive value was high, $r = 0.49$, $p < .001$, 95% CI [0.25, 0.69]. We computed the mean incentive value for each couple separately, with high scores indicating high incentive value of the desired couple performance.

2.3.4. Modes of thought

To assess participants' modes of thought, we followed the procedure by Sevincer and Oettingen (2013) and Sevincer et al. (2016) with few slight modifications. Each dancer was asked to identify one important wish they had with respect to training and one important wish they had with respect to the upcoming dance competition: "What is your wish for the upcoming training/competition?". After having named their wish they were asked to elaborate on it: "Now we would like you to think about your training/competition-related wish. Think about anything related to your wish, and let your mind go. Please write down your thoughts and images".

We followed the coding process by Sevincer and Oettingen (2013) and Sevincer et al. (2016). First, text responses were segmented into statements, with one statement referring to at least one subject-predicate sequence (Sevincer et al., 2016). Then, each statement was categorized as (a) desired future, (b) present reality, or (c) other. An athlete was classified as having used mental contrasting if he or she generated at least one statement about the desired future and at least one statement about the present reality, mentioning the future first. An athlete was classified as having used reverse contrasting if the athlete generated at least one statement about the present reality first followed by the desired future. An athlete was classified as indulging if he or she generated at least one statement about the desired future but none about the reality and as dwelling if he or she generated at least one

statement about the reality but none about the desired future (Sevincer et al., 2016). For example, if an athlete wrote, "Results between us have not been great since we started and we hope to see improvement with each competition we attend", this text was segmented into two statements: (a) results between us have not been great since we started, and (b) we hope to see improvement with each competition we attend. Since this athlete wrote about present reality followed by a desired future, he/she was categorized to have reverse contrasted. If an athlete wrote, "During training my wish is to be as consistent as possible physically regardless of my emotional state. Every day needs to be some sort of improvement, even if it is pure repetition", this text was segmented into four statements: (a) during training my wish is to be as consistent as possible physically, (b) regardless of my emotional state, (c) every day needs to be some sort of improvement, and (d) even if it is pure repetition. Since this athlete wrote about a desired future followed by present reality, he/she was categorized to have mental contrasted. A second independent rater segmented and coded elaborations of 20 participants that were randomly chosen from our sample. The inter-rater agreement for the category coding was 85%. For the 15% of statements on which raters disagreed, an agreement could be reached through discussion between the two raters. All athletes in our sample were categorized into having one of the four modes of thoughts. Note that, although we followed the coding process that had been used in previous research on the spontaneous use of mental contrasting (Sevincer et al., 2016; Sevincer & Oettingen, 2013), there are limitations to the inter-rater agreement method, such as raters' discordant unitization of text, their different theoretical backgrounds influencing their ratings, or the relationship among the raters and its influence on their ratings (Smith & McGannon, 2017). We addressed several of those limitations by using a strict coding frame that pre-defined the text units (i.e., at least one subject-predicate sequence; Sevincer et al., 2016). Further, the second rater who coded 20 randomly selected elaborations was a psychology researcher unfamiliar to the objective of the present study (see also MacPhail, Khoza, Abler, & Ranganathan, 2016).

We computed a mental strategy score for each couple by summing the ratings pertaining to the training and competition wishes for both partners. Each couple received a final score for their total use of mental contrasting, ranging from 0 to 4. A score of 0 means that no partner engaged in mental contrasting for either the training or competition wish; a score of 4 means that both partners mentally contrasted for both training and competition wishes; and scores in between suggest that mental contrasting was used in only some cases (either across partner or wish type).

2.3.5. Competition performance

Placings for each DanceSport couple at their upcoming competition were obtained from public online databases (DanceSportinfo, 2017; World DanceSport Federation, 2017) and the appropriate competition website. To adjust for competition size, each athlete's competition result was converted to a percentile rank. Low scores on the performance scale indicate a better performance at the competition (see Table 2 for a correlation matrix of the variables).

3. Results

3.1. Descriptive analyses

3.1.1. Desired performance

We operationalized desired performance as the participant's ideal placing taken as a percentage of the total number of couples at the competition, numbers close to 0 indicate a better competition placing. Since we are conducting analyses at the couple-level, we took the mean of each of the dance partner's desired performance to compute their desired couple performance. The 67 DanceSport couples in our sample generally desired a performance at the competition that was higher ($M = 0.18$, $SD = 0.17$) than their actual performance ($M = 0.38$, $SD =$

Table 2

Intercorrelations between spontaneous mental contrasting, expectations, incentive, desired performance, and competition performance as a function of ranking.

	MC	Expectations	Incentive	DP	CP
MC	–	.29	-.11	-.08	-.34*
Expectations	-.05	–	.08	-.39*	-.37*
Incentive	-.01	.46**	–	.01	-.04
DP	.18	-.50**	-.23	–	.77***
CP	.26	-.36*	-.21	.71***	–

Note. Intercorrelations for professional couples ($n = 35$) are presented above the diagonal, and intercorrelations for well-trained couples ($n = 32$) are presented below the diagonal. MC = Spontaneous use of mental contrasting (scores ranging from 0 to 4). DP = Desired performance at the upcoming competition. CP = Actual competition performance. Low scores for DP and CP indicate better performance. * $p < .05$; ** $p < .01$; *** $p < .001$.

0.30). Higher-performing couples desired a higher performance ($M = 0.11$, $SD = 0.10$) than lower-performing couples ($M = 0.26$, $SD = 0.20$), $t(43.84) = -3.80$, $p < .001$, 95% CI [-0.23, -0.07], $d = 0.95$.²

3.1.2. Expectations and incentive value

The DanceSport couples' expectations of achieving their desired performance averaged at $M = 3.71$ ($SD = 0.86$) on a 5-point Likert scale; the couples' incentive value of achieving their desired performance averaged at $M = 4.13$ ($SD = 0.82$) on a 5-point Likert scale. Expectations and incentive value to achieve the desired performance correlated positively, $r = 0.30$, $p = .013$, 95% CI [0.10, 0.49]. Higher-performing couples reported higher expectations to achieve their desired performance ($M = 3.97$, $SD = 0.76$), compared with lower-performing couples ($M = 3.42$, $SD = 0.88$), $t(65) = 2.75$, $p = .008$, 95% CI [0.15, 0.95], $d = 0.67$. However, they did not differ in their incentive value to achieve their desired performance, $t(65) = 0.76$, $p = .45$.

3.2. DanceSport ranking and competition performance

We first compared the competition performance between higher- and lower-performing DanceSport couples in our sample. As expected, higher-performing couples performed significantly better at the competition ($M = 0.18$, $SD = 0.19$) compared with lower-performing couples ($M = 0.59$, $SD = 0.25$), $t(57.86) = -7.34$, $p < .001$, 95% CI [-0.51, -0.30], $d = 1.85$.

3.3. DanceSport ranking and spontaneous use of mental contrasting (hypothesis 1)

We proposed that the DanceSport ranking would predict the spontaneous use of mental contrasting related to training and competition wishes, with higher-performing DanceSport athlete couples showing a higher use of spontaneous mental contrasting compared to lower-performing DanceSport athlete couples. In support of our hypothesis, higher-performing couples showed a significantly higher use of spontaneous mental contrasting ($M = 2.26$, $SD = 1.40$) compared to lower-performing couples ($M = 0.06$, $SD = 0.25$), $t(36.29) = 9.12$, $p < .001$, 95% CI [1.71, 2.68], $d = 2.19$. Specifically, 30 out of 35 higher-

performing couples (i.e., 85.7%) had at least one athlete spontaneously mentally contrast for at least one wish, whereas only 2 out of 32 lower-performing couples (i.e., 6.3%) had at least one athlete spontaneously mental contrasted for at least one wish.

To give an example of spontaneous mental contrasting, one athlete wrote on her training wish, "[My goal is to] do everything perfect. We are on the practice ... every morning at 9 ... outside is foggy and in the beginning is difficult to move your body ... then you try to warm up ... and then is little bit better but you don't feel your body like in the evening." This athlete engaged in spontaneous mental contrasting by first elaborating on the desired future of performing perfectly to then elaborate on the difficulties standing in the way. To give an example of spontaneous indulging, one athlete wrote on her competition wish, "[My goal is to] deeply focus and feel secure, confident and engaged. A nice balance of continual conversation of bodies working together. To work hard but not have it feel like hard work." This athlete engaged in spontaneous indulging by only elaborating on the desired future and not mentioning any obstacles or difficulties. To give an example of spontaneous dwelling, one athlete wrote on her training wish, "If partner gets stressed out easily or does not have the same goals, then the training process becomes challenging." This athlete only dwelled on obstacles that might hinder successful training. Lastly, to give an example of spontaneous reverse contrasting, one athlete wrote on her training wish, "As people and as dancers we have different moods after a long day of work or study and not always my 'full power' match to my partners 'full power'. We must find a common language to be sure we are both on the same wave about our preparations." This athlete engaged in reverse contrasting by first elaborating on difficulties, such as mood states and stress to then elaborate on the desired future – the synchrony during preparation. We obtained similar results when we analyzed the relation of our ranking to spontaneous use of mental contrasting for the training and competition wishes separately.

In addition, since previous research suggested that expectations of attaining the desired future impacts how mental contrasting might affect achievement of this goal (see review by Oettingen, 2012), we tested if expectations could potentially have a moderating effect on performance. Since expectations were generally high among all couples ($M = 3.66$, $SD = 0.89$), the main effect of expectations on performance was not significant ($F(8, 50) = 1.10$, $p = .38$). Also, the interactions between ranking (higher-vs. lower-performing couples) and expectations ($F(4, 50) = 0.49$, $p = .744$) and between the spontaneous use of mental contrasting and expectations were not significant ($F(8, 50) = 0.24$, $p = .98$).

3.4. Spontaneous use of mental contrasting and competition performance among higher-performing couples (hypothesis 2)

We hypothesized that the spontaneous use of mental contrasting would predict competition performance, with couples who spontaneously mentally contrast (vs. indulge, dwell, or reverse contrast) showing a higher performance at the competition. Since we found that more higher-performing athletes than lower-performing athletes used mental contrasting, we investigated the predictive relation between spontaneous mental contrasting on competition performance among higher-performing DanceSport couples only. In support of our hypothesis, we found that the spontaneous use of mental contrasting significantly predicted performance at the upcoming competition among higher-performing couples, $b = -0.05$, $t(33) = -2.09$, $p = .045$, 95% CI [-0.09, -0.001]. That is, the more higher-performing couples spontaneously mentally contrasted their training or competition wishes, the better their performance was at the upcoming competition. When we analyzed the predictive relations between spontaneous use of mental contrasting and competition performance among higher-performing couples for the training and competition wishes separately, we received the same results for the training wishes, $b = -0.10$, $t(33) = -2.61$, $p = .014$, 95% CI [-0.18, -0.02], whereas the relation

² Because all independent and dependent variables were assessed at the couple level (and not the individual level), the unit of analysis is consistent across variables and thus our analyses do not violate the independent observations assumptions. Accordingly, we no longer needed to model the residual variance covariance matrix to account for non-independence. Since our research question focuses on the use of mental contrasting and its relation to performance on the level of DanceSport couples, we did not use a multi-level approach for our analyses.

for the competition wishes was not significant, $b = -0.05$, $t(33) = -1.09$, $p = .28$, although it trended in the expected direction.³ We will return to this point in the discussion.

4. Discussion

In the present study, we investigated the spontaneous use of mental contrasting as a mental strategy in professional DanceSport athlete couples. We recruited athlete couples and then classified them according to their performance history as higher- and lower-performing couples relative to our sample. We also assessed their thoughts and images regarding two types of wishes: a competition wish and a training wish. Furthermore, we assessed the couples' performance at a subsequent DanceSport competition. We observed that among the DanceSport couples, higher-performing couples performed better at the upcoming competition compared to lower-performing couples. Importantly, higher-performing couples showed a higher spontaneous use of mental contrasting when elaborating on wishes related to training and to their upcoming competition, compared with lower-performing couples. Lastly, the spontaneous use of mental contrasting predicted successful performance at the upcoming DanceSport competition among higher-performing couples.

Our study stands in accordance with previous literature showing that mental contrasting is an effective self-regulation technique that is related to goal pursuit in various life domains (Oettingen, 2012) and that the spontaneous use of mental contrasting is associated with outcomes such as active engagement, high self-regulation skills, and a high need for achievement (Sevincer et al., 2016). The present results add to the literature on mental contrasting by suggesting that research findings on the predictive relation between spontaneous mental contrasting and strong performance can be expanded to professional DanceSport and perhaps to the domain of athletic performance, more broadly. Specifically, spontaneous mental contrasting was more characteristic of higher-performing than lower-performing athletes, and among the higher-performing athletes, those who spontaneously mentally contrasted tended to achieve a better performance at the competition than those who engaged in other modes of thought.

The present results support research on the beneficial effects of mental strategies as a pre-performance technique in DanceSport (see also Baltzell, 2016; Jones & Stuth, 1997; Woolfolk, Murphy, Gottesfeld, & Aitken, 1985). They contribute to the literature on mental strategies in athletics, showing that professional DanceSport couples who mentally contrasted their wishes related to training or performance at an upcoming competition with their current reality were also the athletes who performed better at the upcoming DanceSport competition, compared with couples who engaged in other modes of thought. Possibly, mental contrasting helped couples to focus on specific obstacles to successful synchronization of their dance movement and prepared them to detect and act on those obstacles. Another possibility is that mental contrasting, compared with other modes of thought, helped to regulate the couples' physiological arousal level in order to achieve their "optimal mental state" (see Jones & Stuth, 1997).

Future studies should investigate the mechanisms by which mental contrasting spurs successful DanceSport performance. Furthermore, they should induce mental contrasting compared to relevant control conditions in DanceSport athletes and investigate its short-term and long-term effects on dance performance during training and competition as well as the down-stream consequences on frequency of injuries and other mental and physical health indicators. Based on those

findings, interventions might then focus on ways to strengthen the use of mental contrasting as a training routine in DanceSport (e.g., by means of a training app or by including the exercise in the curriculum as a short module at the beginning of each training session).

One might argue that the qualitative analysis used in the present study bears some limitations regarding its psychometric properties, such as validity and reliability (e.g., Smith & McGannon, 2017). However, we argue that our qualitative analysis followed the common criteria stated by Tracy (2010), by investigating a topic relevant to sport and exercise psychology (*Worthy topic*), basing the collection and analysis of qualitative data on theoretical foundations (*Rich rigor*), transparently reporting the methods used (*Sincerity*), and by providing examples of participants' elaborations (*Credibility*). Further, our findings might well be transferrable to other athletic disciplines (*Resonance*), and thus offer a significant theoretical contribution to both the role of mental strategies in athletics and the spontaneous use of mental contrasting (*Significant contribution*). Lastly, our research followed ethical principles (*Ethical*), and used coherent procedures to answer our research questions (*Meaningful coherence*).

In sum, we examined the predictive power of spontaneous mental contrasting on competition performance by summing the occurrence of mental contrasting within a couple on both training and competition wishes (0–4 possible occurrences). When we performed our analyses on the training and competition wishes separately (0–2 possible occurrences), we observed an interesting additional finding that the spontaneous use of mental contrasting on the training wishes alone significantly predicted successful competition performance, whereas spontaneous mental contrasting on the competition wishes alone did not significantly predict successful competition performance. Intuitively, these results suggest that in the professional athlete's context, changing one's mental strategy *shortly before the competition* does not significantly affect performance as much as the athlete couple's ranking does. On the other hand, mental strategies *during training* may be an important determinant of the athlete couple's competition performance. In fact, for mental contrasting to be effective, there needs to be room for behavior change (see Oettingen, 2012). Thus, self-regulation by means of mental contrasting in training situations where there is room and time for improvement might be especially effective in preparing DanceSport couples for their upcoming competitions.

4.1. Limitations

One limitation of our study lies in the difficulty of quantifying DanceSport performance. We measured our couples' desired performance as well as their actual performance at the competition. In DanceSport, the differences in the quality of dancing among placings are not constant. For example, the difference in DanceSport standards between the first and second place couples may be much smaller than that between seventh and eighth place. In addition, there may have been other factors affecting some of the athlete couples' performance on a competition beyond their control, such as health or political factors.

5. Conclusion

Overall, the results of our study highlight potential facets of the champion's mindset in DanceSport. That is, engaging in mental contrasting as a mental strategy about training and competition wishes within a DanceSport couple was related to their ranking, and in addition, it predicted successful subsequent performance in DanceSport among the higher-performing couples. These findings are possibly based on how mental contrasting during training would help to elucidate the components of dance performance that the athlete couple would need to actively work to improve on as they prepare for their competitions. The latter finding is in line with the literature showing that mental contrasting supports behavior change when behavior change is still possible (Oettingen, 2012).

³ Note that, when we analyzed the training- and competition wishes separately, we used two separate scales for the two wish types, respectively. Those scales ranged from 0 (indicating that no partner mentally contrasted their training/competition wish) to 2 (indicating that both partners mentally contrasted their training/competition wish).

A World DanceSport Champion who spontaneously mentally contrasted her training wish wrote: “(I wish) to find the communication and connection inside of the couple which helps all the movements flow from one into another ... The movement can be heavy, the leading can be not clear enough ...” Indeed, engaging in the optimal mental strategy during training appears to be an important factor in distinguishing a “champion” athlete from other athletes.

Declarations of interest

None.

Conflict of interest

The authors, Isabelle Qiyin Tay, Timothy Valshtein, Nora Rebekka Krott, and Gabriele Oettingen declare that they have no conflict of interest.

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